REMARKS

The Office Action dated July 13, 2004, has been carefully considered. Claims 1, 2, 5, 6, and 15-29 are pending. Claims 3, 4, and 7-14 were previously withdrawn.

Double Patenting:

Claims 1, 2, 5, and 6 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-28 of U.S. Patent No. 6,004,652. As set forth in the Official Action, "[a]lthough the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims do not exclude the openings in the reinforcing layer due to the open claim language drawn to "comprising."

Applicant respectfully submits that the inventions and claims in the issue patent is a structural dimple panel having multiple layers, which are mechanically interlocked by strand material rooted through the layers. The invention claimed in the subject application is a dynamic structural dimple panel having multiple layers wherein one of the layers, the dimple layer, is compliant and the compliance of the dimple layers allows loading of the panel to a reinforcing layer. Applicant respectfully submits that the double patenting rejection is improper and should be withdrawn.

Claim Rejections – 35 U.S.C. § 102

Claims 1 and 2 were rejected under 35 U.S.C. § 102(b) as being anticipated by either Seksaria et al., (U.S. Patent No. 5,244,745) or Blacklin et al. (U.S. Patent No. 4,411,121).

Claim 1 has been amended to recite a dynamic structural dimple panel comprising a dimple layer having a plurality of dimples extending from one side of the dimple layer, said dimples being spaced from one another and not touching, said dimple layer absorbing, storing, dissipating or distributing energy to make said dimple layer compliant; a reinforcing layer being configured to connect with the dimples of the dimple layer, said reinforcing layer connected to said dimple layer by said dimples, compliance of said dimple layer accommodating loading of said panel to distribute stresses placed on the connection of said

dimples; and wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel. (Emphasis added).

Claim 2 has been amended to recite a dynamic structural dimple panel, comprising a dimple layer having a plurality of dimples extending from one side of the dimple layer, said dimples being spaced from one another and not touching, said dimple layer absorbing, storing, dissipating or distributing energy to make said dimple layer compliant; a reinforcing layer being configured to connect with the dimples of the dimple layer, said reinforcing layer connected to said dimple layer by said dimples, the compliance of said dimple layer accommodating loading of said panel to distribute stresses placed on the connection of said dimples, said dimple layer being a memory material which allows a size of a passage and/or a distance between the reinforcing layer and the dimple layer to be changed when the memory material undergoes a change in temperature; and wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel. (Emphasis added).

Support for the amended claims can be found on page 17, line 16 – page 19, line 13, wherein FIGS. 21A and 21B show perspective views of the dynamic dimple panel without load (FIG. 21A) and under external load (FIG. 21B). FIGS. 22A and 22B show an embodiment illustrating a perspective view of a dynamic structural dimple panel.

Seksaria relates to a metal sheet that is formed of a plurality of cup-shaped elements that is light in weight but provides relatively high strength and stiffness. As shown in FIGS. 1 and 2 of Seksaria, the structural sheet comprises an outer aluminum sheet 12 and a second inner rigidify sheet 14. The second inner rigidify sheet 14 includes cup-shaped configurations 16 having upper planar portions 18. The upper planar portions 18 contain an adhesive 26 which secures the outer aluminum sheet 12 to the second inner rigidify sheet 14.

Blacklin relates to a structural steel member and composite panel including the same and having a sheet of industrial steel having formed therein a pattern of dome-like projections. As recited in the Blacklin, "[i]t has been discovered, however, that a combination can be provided in the dome-like projections, as illustrated in the aforementioned patent, which provides increased overall depth as well as resistance to crushing. This resistance to crushing can be increased by forming a substantially flat surface

on the uppermost peak of the projections of a diameter much less than that of circular domes." Col. 1, lines 51-52.

Neither Seksaria nor Blacklin, however, teach or suggest a dimple layer having a plurality of dimples extending from one side of the dimple layer, said dimples being spaced from one another and not touching, and wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel. (Emphasis added). Accordingly, Claims 1 and 2 should be allowable.

Claims 1, 2, 5, and 6 were rejected under 35 U.S.C. § 102(b) as being anticipated by Takahashi et al. (U.S. Patent No. 5,156,327) and Jurisich (U.S. Patent No. 3,622,430).

Claim 5 has been amended to recite a multilayer dimple panel, comprising a dimple layer having a plurality of first dimples extending from a first side thereof and a plurality of second dimples extending from a second side thereof, the first and second dimples being misaligned from one another and non-touching, said dimple layer being compliant; a first reinforcing layer connected to said dimple layer; a second reinforcing layer connected to said dimple layer, the compliance of said dimple layer accommodating loading of said multilayer dimple panel to distribute stresses placed on the connection of said dimples; and wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel. (Emphasis added).

Claim 6 has been amended to recite a multilayer dimple panel, comprising a dimple layer having a plurality of first dimples extending from a first side thereof and a plurality of second dimples extending from a second side thereof, the first and second dimples being misaligned from one another and non-touching, said dimple layer being compliant; a first reinforcing layer connected to said dimple layer; a second reinforcing layer connected to said dimple layer, the compliance of said dimple layer accommodating loading of said multilayer dimple panel to distribute stresses placed on the connection of said dimples, said dimple layer being a memory material which allows a size of a passage and/or a distance between both the first and second reinforcing layers and the dimple layer to be changed when the memory

material undergoes a change in temperature; and wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel. (Emphasis added).

Takahashi relates to a procedure for molding composite materials. The first step is to form the dimples of the core in accordance with a super-plasticizing molding procedure, so that the dimples may exhibit a height higher than that in its final configurations which corresponds with the above described predetermined configurations, and its top surface is formed in a convex configuration. Then, pressure is applied to the core to flatten it by forcibly deforming it prior to or at the moment of jointing the skins of the predetermined configuration, so that the dimples may come into contact with the internal surface of the skin at their top surfaces. Thereafter or simultaneously with this operation, the skins of the predetermined configurations are jointed. The composite material formed exhibits an increased operational reliability and an improved dimensional precision in its configuration, without causing the dimples top surfaces to be out of contact due to a design allowance.

Jurisich relates to a structural laminate comprising two outer and one inner reinforced resin sheets having major surfaces in overlying relationship, wherein one of said outer sheets and said inner sheet sandwiches a honeycomb or cellular core structure with said inner sheet also serving to sandwich a dimpled or relieved sheet with the other outer sheet. The honeycomb core 20 may be adhered to the glass fiber sheet 12 in any suitable manner, and is usually adhered by a resin adhesive. Col. 2, lines 40-42.

As set forth above, neither Takahashi nor Jurisich teach or suggest a dimple layer having a plurality of dimples extending from one side of the dimple layer, said dimples being spaced from one another and not touching, and wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel. Accordingly, Claims 1, 2, 5, and 6 should be allowable.

In addition, none of the references cited in the previous related applications teach or suggest a dimple layer having a plurality of dimples extending from one side of the dimple layer, said dimples being spaced from one another and not touching, and wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel. (Emphasis added).

New Claims 15-32:

Claims 15-29 are dependent from Claim 1 and for the reasons set forth above, should be allowable.

Conclusion:

In the event that there are any questions concerning this response or the application in general, the Examiner is respectfully urged to telephone the undersigned attorney so that prosecution may be expedited.

Respectfully submitted,
BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: _____
Kirk M. Nuzum
Registration No. 38,983

P.O. Box 1404
Alexandria, Virginia 22313-1404
(650) 622-2300

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